

EIS Scoping Comment on Impacts of Noise from Capesize and Panamax Bulk-Cargo Vessels on the Cherry Point Aquatic Reserve and the Salish Sea

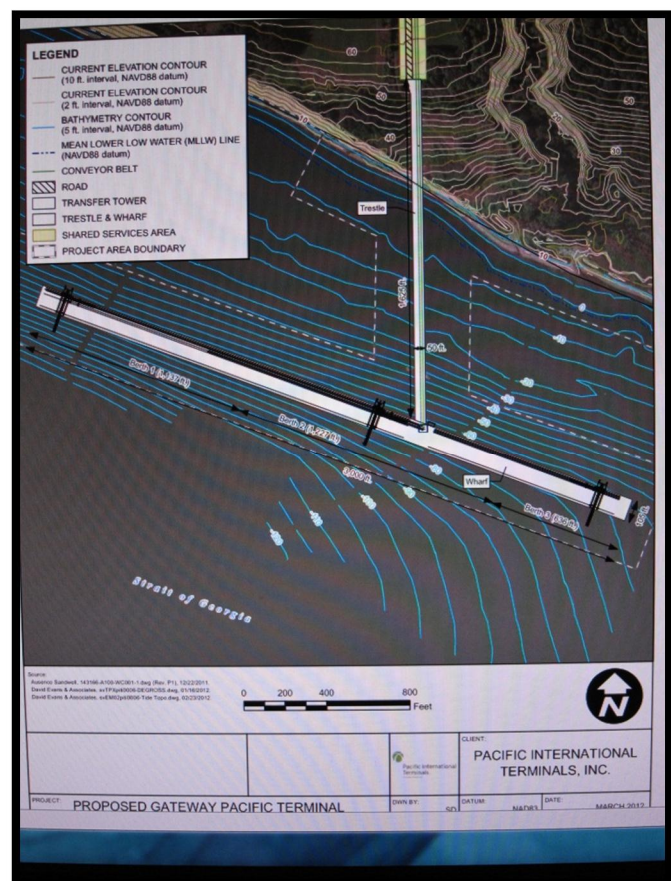
My name is Michael Crum. I received my Ph.D. from Northwestern University. Following a career as a clinical and research audiologist and educator, I chose my retirement home in Birch Bay for the area's overall quality of life, natural beauty, boating and hiking opportunities. Having enjoyed many hours observing marine life, while kayaking and sailing in Birch Bay and the Salish Sea, I am deeply concerned about the reasonably foreseeable adverse impacts of an additional 974 annual bulk-cargo vessel transits and about the reasonably foreseeable adverse impacts, on our local marine environment, from high intensity noise generated by moored vessels at the proposed Gateway Pacific Terminal (GPT) wharf.

Pacific International Terminals, Inc., Project Information Document, Chapter 5.3.3.4, Forage Fish, states: *"Pacific herring respond to a variety of auditory inputs, including marine mammal echolocation sounds (Wilson and Dill 2002) and apparent production of endogenous sounds (Wilson, et al. 2003). Assuming that Pacific herring have a noise threshold of 75 dB and that vessels generally emit noise levels of 145 dB in the same frequency range (Gustafson, et al. 2006), Pacific herring would be able to detect the vessels. However, it is unknown whether the noise would disturb herring."* To better appreciate a vessel noise level of 145 dB, relative to a sound threshold level of 75 dB (in the same frequency range), one must consider that the decibel (dB) is based upon a logarithmic scale ... not an arithmetic scale. Thus, 145 dB is not roughly twice as much as 75 dB; rather, a sound pressure level of 145 dB represents a sound magnitude ratio of more than 10,000,000: 1, relative to a sound pressure level of 75 decibels. Therefore, the statement, *"... Pacific herring would be able to detect the vessels,"* is dismissive and it grossly understates the foreseeable adverse impacts of exposure to long-term noise levels of 145 dB or greater... much greater.

A recent *New York Times* article, December 11, 2012, "A Rising Tide of Noise Is Now Easy to See" reported on a project being conducted by the National Oceanic and Atmospheric Administration (NOAA). According to the NOAA Underwater Sound Field Mapping Working Group, "The predominant anthropogenic source of underwater noise on a global scale is large commercial ships." When monitored by a hydrophone at a distance of one meter, a seismic gun (like those used in

wharf construction) produces 250 dB, an oil tanker 200 dB and a tugboat 170 dB, according to Michael Bahtiarian, a senior official at Noise Control Engineering, near Boston, MA that specializes in reducing ship noise and vibrations. Given that Capesize and Panamax bulk-cargo carriers are significantly larger than either oil tankers or tugboats, the GPT Project Information Document's use of 145 dB, to be representative of vessels at the proposed GPT wharf, appears to be unrealistic and an under-representation of the foreseeable adverse effects of vessel noise at the wharf.

Airborne sound travels at a speed of approximately 1127 ft. per second, with intensity decreasing over distance. Sound travels about 4.3 times faster in water, with intensity remaining relatively unchanged over much greater distances. And sound travels about 15 times faster in steel. With drafts of 30-60+ feet and lengths of 600 to 1200+ feet, the hulls of moored Capesize and Panamax bulk-cargo vessels become gigantic, underwater noise propagators. Noise from continuously running diesel engines and all noises created by tons of coal being loaded into the vessels' steel hulls will be propagated directly into the surrounding Cherry Point Marine Reserve and Salish Sea. The intensity of those noises would be further amplified by the fact that the proposed wharf, and all moored vessels, would be parallel to the rapidly rising sea floor behind the wharf. (Figure at right)



The ears of a bony fish, such as Pacific herring, assist in maintaining equilibrium, acceleration and hearing sensitivity. There are no external openings to the ears. Sound waves travel through soft tissue to the ears (a fish's soft body tissue has about the same acoustic density as water). Like the ear, the fish's lateral line senses vibrations. It functions mainly in detecting low-frequency vibrations and directional water flow, and in distance perception. While there is variation in hearing sensitivity, bandwidth, and upper frequency limit among fish species, the frequency range of the highest intensity cargo vessel noise (50-400 Hz), coincidentally, is similar to the range of greatest sensitivity among a number of fish species. Thus, it is reasonably foreseeable that all marine species throughout the Cherry Point Aquatic Reserve and well into the Salish Sea (including and beyond the Alden Bank) would be sensitive to and disoriented by the virtually constant, high intensity noise levels generated by and propagated from bulk-cargo vessels moored, approaching and/or departing from the proposed GPT wharf.

Given the extraordinarily high intensity noise levels associated with the operation and the loading of Capesize and Panamax bulk-cargo vessels and the location and orientation of the proposed GPT wharf being in such close proximity to the Cherry Point Aquatic Reserve, I ask that the EIS include and systematically analyze:

- Impacts of proceeding any further with Pacific International Terminals' application for the proposed GPT without the applicant's completion and full compliance with all requirements of the 1999 Settlement Agreement. Specifically, Vessel Traffic Analysis (2.10a), Vessel Mooring Study and Plan (2.11), Spill Prevention, Preparedness, and Response Plans (2.9a), Baseline and Annual Monitoring – Sediment, Tissue, and Water Quality (2.5), and Herring Behavior Studies (2.3).
- Impacts of exposure to long-term, high intensity noise (steady-state and intermittent), from the operation/loading of Capesize and Panamax bulk-cargo vessels moored, approaching and/or departing from the proposed GPT wharf, on all marine species, including: Pacific herring and Dungeness crab, in the Cherry Point Aquatic Reserve and in the surrounding Salish Sea.

